

Conference Abstract

Towards an Ecological Trait-data Standard Vocabulary

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Abstract

Trait-based research spans from evolutionary studies of individual-level properties to global patterns of biodiversity and ecosystem functioning. An increasing number of trait data is available for many different organism groups, published as open access data on a variety of file hosting services. Thus, standardization between datasets is generally lacking due to heterogeneous data formats and types. The compilation of these published data into centralised databases remains a difficult and time-consuming task.

We reviewed existing trait databases and online services, as well as initiatives for trait data standardization. Together with data providers and users participating in a large long-term observation project on multiple taxa and research questions (the Biodiversity Exploratories, www.biodiversity-exploratories.de), we identified a need for a minimal trait-data terminology

that is flexible enough to include traits from all types of organisms but simple enough to be adopted by different research communities.

In order to facilitate reproducibility of analyses, the reuse of data and the combination of datasets from multiple sources, we propose a standardized vocabulary for trait data, the Ecological Trait-data Standard Vocabulary (ETS, hosted on GFBio Terminology Service, <https://terminologies.gfbio.org/terms/ets/pages>), which builds upon and is compatible with existing ontologies. By relying on unambiguous identifiers, the proposed minimal vocabulary for trait data captures the different degrees of resolution and measurement detail for multiple use cases of trait-based research. It further encourages the use of global Uniform Resource Identifiers (URI) for taxa and trait definitions, methods and units, thereby readying the data publication for the semantic web. An accompanying R-package ([traitdata form](#)) facilitates the upload of data to hosting services but also simplifies the access to published trait data.

While originating from a current need in ecological research, in the next step, the described products are being developed for a seamless fit with broader initiatives on biodiversity data standardisation to foster a better linkage of ecological trait data and global e-infrastructures for biological data. The ETS is maintained and discussion on terms are managed via Github (<https://github.com/EcologicalTraitData/ETS>).

Keywords

trait data, data standard, Open Traits, terminology, semantic web

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